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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/642,921	08/18/2003	Rodney L. Kirstine	2269-5659US (02-1364.00/U)	3659
24247	7590	08/12/2004	EXAMINER	
TRASK BRITT P.O. BOX 2550 SALT LAKE CITY, UT 84110			GUADALUPE, YARITZA	
			ART UNIT	PAPER NUMBER
			2859	

DATE MAILED: 08/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/642,921

Applicant(s)

KIRSTINE, RODNEY L.

Examiner

Yaritza Guadalupe McCall

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-44 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1 – 7, 9 – 10, 13 – 14, 17 – 19, 21, 27 – 28 and 30 – 44 are rejected under 35 U.S.C. 102(e) as being anticipated by Nelson et al. (US 6,427,353).

Nelson et al. discloses an apparatus for determining at least one dimensional value of a substantially planar substrate comprising a carrier (14) configured for holding and positioning a substantially planar substrate by means of support (50) and having first and second opposed surfaces in a plane; a first linear measuring device (18) including a first movable caliper finger disposed on one side of the plane for measuring a first linear distance from a zero point to the first surface of the substrate along an axis substantially normal to the first and second surfaces; a second linear measuring device (18) located 180 degrees from the first surface and including a second movable caliper finger disposed on an opposing side of the plane for measuring a second linear distance from the zero point to the second surface of the substrate along the axis generally

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normal to the first and second surfaces, the second movable caliper finger being coaxial with the first movable caliper finger; and a calculation device (22, 24, 26, 28, 32, 34, 36, 38, 40, 42, 44, 46) for calculating the first and second linear distances. Nelson et al. further discloses the carrier (14) configured to move the substrate within the plane between the first and second movable caliper fingers due to the rotational movement of the support (50) allowing the carrier to move the substrate in at least one direction parallel to the plane, wherein said carrier continuously moves the substrate between the first and second movable caliper fingers while in contact therewith so as to allow continuous and simultaneous measurements by the calculation device.

Nelson et al. also discloses the first and second movable caliper fingers each including terminal contact members for contacting the respective first and second surfaces of the substrate, and wherein the first and second linear measuring devices are capable and configured to provide a zero point value as a linear distance for each of the first and second movable caliper fingers with the terminal contact members in axial contact with each other for use by the calculation device in calculating the first and second linear distances (See Column 5, lines 1 – 50). Nelson et al. also discloses the contact members comprising one of smooth-surfaced enlargements at the terminal ends of the caliper fingers, each biased toward the plane (See Column 5, lines 25 – 26). Nelson et al. discloses an apparatus configured to measure the first linear distance and the second linear distance from the zero point in at least three different locations (See Figures 3 – 5) on the first and second surfaces of the substrate in association with movement of the substrate by the carrier in the at least one direction, wherein the calculation device (22, 24, 26, 28, 32, 34, 36, 38,

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40, 42, 44, 46) is configured to determine at least one characteristic of the substrate from at least some of the measurements at the at least three different locations (See Column 5, lines 5 – 15).

Nelson et al. further discloses an apparatus for determining at least one dimensional value of a substantially planar substrate comprising at least one complementary set of linear measuring devices including movable caliper fingers (See Figures 3 – 5), each of the at least one set comprising first and second coaxial, opposing, movable caliper fingers with mutually facing terminal ends; structure for biasing (See Column 5, lines 25 – 26) each of the first and second coaxial, movable caliper fingers toward one another; a first contact member (18) on the terminal end of the first caliper finger; a second contact member (18) on the terminal end of the second caliper finger; wherein the at least one complementary set of linear measuring devices is configured to provide a zero point value as a linear distance for each movable caliper finger with contact members of the first and second coaxial, opposing, movable caliper fingers in mutual contact defining a zero point and to provide displacement values for each movable caliper finger when displaced away from the zero point; a carrier (14, 50) for holding, positioning and moving a substantially planar substrate in at least one direction parallel to a plane perpendicular to the movable caliper fingers of the at least one complementary set of linear measuring devices to pass the substantially planar substrate therebetween and configured to move the substantially planar substrate parallel to the plane continuously (See Column 5, line 5); and a device (22, 24, 26, 28, 32, 34, 36, 38, 40, 42, 44, 46) for receiving zero point values and displacement values and calculating at least one dimensional value associated with the substantially planar substrate,

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wherein said device for receiving zero point values and displacement values and calculating at least one dimensional value associated with the substantially planar substrate comprises a computer (22) and further comprises memory (46) and at least one output device (26) for storage and expression of the at least one dimensional value.

Nelson et al. teaches the carrier configured to move the substantially planar substrate continuously between the movable caliper fingers while in contact therewith by means of support (50), wherein the device for receiving zero point values and displacement values and calculating at least one dimensional value associated with the substantially planar substrate is configured to determine at least one characteristic of the substantially planar substrate from at least some of a plurality of displacement values taken along a line of contact with the substantially planar substrate by the movable caliper fingers. Nelson et al. discloses the at least one set of complementary linear measuring devices comprises a plurality of sets of complementary linear measuring devices and wherein the plurality of complementary sets of linear measuring devices are mutually spaced along the plane transversely to a direction of intended movement of the substantially planar substrate by the carrier (See Figures 3 – 5).

With respect to the method as stated in claims 32 – 44 : The method for determining at least one dimensional value of a substantially planar substrate comprising the steps of establishing a plane parallel to which a substantially planar substrate is to be disposed;

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establishing a zero point location in or immediately adjacent the plane from which first and second opposing linear distances perpendicular to the plane may be measured; placing the substantially planar substrate parallel to the plane and with the zero point location located within the substantially planar substrate; and measuring the first and second opposing linear distances from the zero point location to each of two opposing sides of the substantially planar substrate in at least one location on the substantially planar substrate; further comprising the step of determining a thickness of the substantially planar substrate by adding the measured first and second opposing linear distances; wherein the at least one location comprises a plurality of predetermined locations; and further comprising the step of determining any warpage of the substantially planar substrate by comparing differences in at least some of the opposing, measured first and second linear distances from the zero point locations at different locations of the plurality of predetermined locations; determining any warpage of the substantially planar substrate by comparing differences in measured first linear distances from the zero point location at the different locations of the plurality of predetermined locations; selecting at least some of the predetermined locations of the plurality to be spaced along a longitudinal extent of the substantially planar substrate; wherein the at least some predetermined locations spaced along a longitudinal extent of the substantially planar substrate are selected to be adjacent a longitudinal edge of the substantially planar substrate; further comprising the step of selecting at least one other location of the plurality on the substantially planar substrate to be spaced laterally from the at least some of the predetermined locations; wherein the plurality of predetermined locations comprises a substantially continuous path extending across at least a portion of the substantially planar substrate; also including the step of measuring the first and second linear distances by

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measuring displacements of first and second opposing elements in contact with the opposing sides of the substantially planar substrate; establishing the zero point location as a location of mutual contact of the first and second opposing elements without interposition of the substantially planar substrate therebetween; biasing the first and second opposing elements toward mutual contact the workpiece and passing the substantially planar substrate between the first and second opposing elements while measuring the displacements thereof on a plurality of predetermined locations on the substantially planar substrate as stated in claims 33 – 44 will be met during the regular operation of the apparatus disclosed by Nelson et al.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 8, 11, 12 and 24 – 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nelson et al. (US 6,427,353).

Nelson et al. discloses an apparatus as stated in paragraph 2 above.

Nelson et al. does not disclose the carrier configured to move the substrate and measure the first and second linear distances in a plurality of directions within the plane as stated in claims 8, 11 – 12 and 24 - 26.

Regarding claims 8, 11 – 12 and 24 – 26 : Nelson et al. discloses an apparatus for measuring a substrate having a carrier (14) and a support (50) that allows movement and rotation of the substrate in a direction parallel to the plane of measurements. The use of the particular type of carrier claimed by applicant, i.e., configured to move the substrate and measure the first and second linear distances in a plurality of directions within the plane, absent any criticality, is considered to be nothing more than a choice of engineering skill, choice or design because 1) neither non-obvious nor unexpected results, i.e., results which are different in kind and not in degree from the results of the prior art, will be obtained as long as the substrate is allowed movement and rotation in order to measure a plurality of parameters along the surface in multiple positions as already suggested by Nelson et al., 2) the carrier claimed by Applicant and the carrier used by Nelson et al. are well known alternate types of carriers which will perform the same function, if one is replaced with the other, of moving and rotating the substrate in order to measure a plurality of parameters along the surface in multiple positions, and 3) the use of the particular type of carrier by Applicant is considered to be nothing more than the use of one of numerous and well known alternate types of carriers that a person having ordinary skill in the art would have been able to provide using routine experimentation in order to allow movement and

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rotation of the substrate in order to measure a plurality of parameters along the surface in multiple positions as already suggested by Nelson et al.

5. Claims 16 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nelson et al. (US 6,427,353) as applied to claims 1 – 14, 17 – 19, 21 – 28 and 30 – 44 above, and further in view of Ercole et al. (US 5,883,313).

Nelson et al. discloses an apparatus as stated in paragraph 2 above.

Nelson et al. does not discloses the first and second linear measuring devices comprising linear encoders, linear potentiometers or linear displacement transducers as stated in claims 16 and 29.

With respect to claims 16 and 29 : Nelson et al. discloses an apparatus having a plurality of probes spaced along the surface of a substrate and positioned at 180 degrees, and states that the probe type will vary depending on the conditions and measurements to be made, but does not discloses the use of a particular type of probes (See Column 4, lines 24 – 34). Ercole et al. discloses a measuring gauge having a plurality of probes (6, 27) for contacting and measuring the substrate (2), the probes being linear transducers (27, See Abstract). Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to select linear transducers as their choice of probes in order to increase the accuracy of the

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measurement and since Nelson et al. gives the option of selecting any type of probe based on process conditions and desirability.

6. Claims 15 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nelson et al. (US 6,427,353) as applied to claims 1 – 14, 17 – 19, 21 – 28 and 30 – 44 above, and further in view of Ashton et al. (US 4,687,979).

Nelson et al. discloses an apparatus as stated in paragraph 2 above.

Nelson et al. does not disclose the robotic gripper as stated in claims 15 and 20.

Regarding claims 15 and 20 : Ashton et al. discloses a robotic gripper (20) and enhanced gripper controller for precisely conveying a substrate or article from one location to another location in a correct manner. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to add a robotic gripper and controller as taught by Ashton et al. to the apparatus for measuring disclosed by Nelson et al. in order to quickly allow placement and removal of the substrate in a precise and correct manner before and after measurements are made.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following reference are considered of relevance to the present application :

- a. Ohtsuka (US 6,701,633)
- b. Prinz (US 5,884,410)
- c. King (US 5,806,199)
- d. Monks (US 6,648,708)
- e. Jang (US 6,108,924)
- f. Takahashi (US 6,754,973)

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yaritza Guadalupe McCall whose telephone number is (571)272-2244. The examiner can normally be reached on 8:00 AM - 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego F.F. Gutierrez can be reached on (571) 272-2245. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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Patent Examiner
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August 9, 2004

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